

IN THE CLAIMS:

1. (Withdrawn) A wing door opening/closing apparatus for swinging up a wing door pivotally mounted to a box body of a in the vicinity of a roof portion of the box body so that said wing door overlies said roof portion and lateral sides of said box body, characterized in that

the wing door opening/closing apparatus is formed by combining a plurality of wing door opening/closing devices having respective different moment characteristics representing a relationship between a moment caused by the weight of the wing door being rotated and at least one moment generated by the respective wing door opening/closing devices or a relation between the angle of rotation of the wing door and at least one moment generated by the wing door opening/closing devices;

at least one of said wing door opening/closing devices including a spring for generating a biasing force for swinging up said wing door and a link mechanism for transmitting the biasing force of said spring to said wing door.

2. (Withdrawn) The wing door opening/closing apparatus as defined in claim 1 wherein each of said wing door opening/closing devices includes a spring for generating the biasing force for swinging up said wing door and a link mechanism for transmitting the biasing force of said spring to said wing door.

3. (Withdrawn) A wing door opening/closing apparatus for swinging up a wing door pivotally mounted to a box body in the vicinity of a roof portion of the box body so that said wing door overlies said roof portion and lateral sides of said box body, characterized in that

the wing door opening/closing apparatus is made up by a plurality of wing door opening/closing devices;

disparity of a moment produced by one of said wing door opening/closing devices with respect to a moment caused by the weight of the wing door being rotated is compensated by a moment generated by the remaining one(s) of the wing door opening/closing devices;

at least one of said wing door opening/closing devices including a spring for generating a biasing force for swinging up said wing door and a link mechanism for transmitting the biasing force of said spring to said wing door.

4. (Withdrawn) The wing door opening/closing apparatus as defined in claim 3 wherein each of said wing door opening/closing devices includes a spring for generating the biasing force for swinging up said wing door and a link mechanism for transmitting the biasing force of said spring to said wing door.

5. (Currently Amended) A wing door opening/closing apparatus for swinging up a wing door pivotally mounted to a box body in the vicinity of a roof portion of the box body so that said wing door overlies said roof portion and lateral sides of said box body, characterized in that

the wing door opening/closing apparatus is formed by combining a plurality of wing door opening/closing devices having respective different moment characteristics representing a relation between the angle of rotation of the wing door and a moment generated by the wing door opening/closing devices;

at least one of said wing door opening/closing devices including a spring for generating a biasing force for swinging up said wing door and a link mechanism for transmitting a the biasing force of said spring to said wing door.

6. (Currently Amended) The wing door opening/closing apparatus as defined in claim 5 wherein each of said wing door opening/closing devices includes a the spring for generating the biasing force for swinging up said wing door and a the link mechanism for transmitting the biasing force of said spring to said wing door.

7. (Withdrawn) The wing door opening/closing apparatus as defined in claim 18 wherein said plural wing door opening/closing devices having said respective different moment characteristics comprise:

a first wing door opening/closing device generating a maximum moment at an angle of rotation of said wing door larger than an angle of rotation thereof for which the weight moment of said wing door is maximum, said first wing door opening/closing device including the spring and the link mechanism; and

a second wing door opening/closing device generating the maximum moment at an angle of rotation of said wing door smaller than the angle of rotation thereof for which the weight moment of said wing door is maximum, said second wing door opening/closing device including the torsion spring.

8. (Withdrawn) The wing door opening/closing apparatus as defined in claim 5 wherein

one of said plural wing door opening/closing devices having the respective different moment characteristics is housed within a box frame when said wing door is closed;

the other(s) of said plural wing door opening/closing devices being mounted outside said box frame along a fore-and-aft direction of the box body in a side-by-side relation to said one wing door opening/closing device housed within said box frame.

9. (Original) The wing door opening/closing apparatus as defined in claim 5 wherein said plural wing door opening/closing devices are arranged side-by-side along a vertical direction.

10. (Withdrawn) The wing door opening/closing apparatus as defined in claim 7 wherein said first door opening/closing device comprises:

a first-1 link member pivotally connected to the inner side of said wing door, and

a first-2 link member pivotally mounted to said vehicle body and pivotally connected to said first-1 link member;

a first-3 link member pivotally connected to said first-2 link member;

a first-1 spring rod connected to said first-3 link member;

a first-1 guide member for translating a connecting point of said first-3 link member and said spring rod; and

a first spring interposed between the box body and the spring rod.

11 – 14. (Cancelled)

15. (Original) The wing door opening/closing apparatus as defined in claim 5 wherein said plural wing door opening/closing devices comprise first and

second wing door opening/closing devices having respective different operating ranges.

16. (Original) The wing door opening/closing apparatus as defined in claim 5 further comprising:

a stopper for halting the operation of at least one of said plural wing door opening/closing devices.

17. (Withdrawn) The wing door opening/closing apparatus as defined in claim 16 wherein the wing door opening/closing device comprises:

a spring for generating a driving force for opening/closing said wing door;
and

a link mechanism pivotally mounted to said box body, said link mechanism having one side slidably pivotally connected to the inner side of said wing door and having the other side connected to said spring for transmitting a driving force of said spring to said wing door;

a portion of said link mechanism slidingly contacting with said wing door being spaced apart from a slide contact surface of said wing door when said stopper halts operation of said wing door opening/closing device on which acts said stopper.

18. (Withdrawn) A wing door opening/closing apparatus for swinging up a wing door pivotally mounted to a box body in the vicinity of a roof portion of the box body so that said wing door overlies said roof portion and lateral sides of said box body, wherein

The wing door opening/closing apparatus is formed by combining a plurality of wing door opening/closing devices having respective different moment characteristics representing a relation between the angle of rotation of the wing door and a moment generated by the wing door opening/closing devices;

at least one of said wing door opening/closing devices including a spring that generates the biasing force for swinging up said wing door and a link mechanism that transmits a biasing force of said spring to said wing door; and

at least one wing door opening/closing device comprises a torsion spring interposed between the inner side of said wing door and the box body.

19. (Withdrawn) The wing door opening/closing apparatus as defined in claim 7 wherein the second wing door opening/closing device applies a swinging-up force to the wing door during the initial stage of the opening of the wing door, if at a preset rotational angle of the wing door, ceases to exert the swinging-up force to the wing door.